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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,032	06/13/2005	Ken-ichi Inui	4439-4034	8848
27123 7590 11/28/2007 MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			EXAMINER LI, RUIXIANG	
			ART UNIT 1646	PAPER NUMBER
			NOTIFICATION DATE 11/28/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOPatentCommunications@Morganfinnegan.com
Shopkins@Morganfinnegan.com
jmedina@Morganfinnegan.com

Office Action Summary

Application No.

10/539,032

Applicant(s)

INUI ET AL.

Examiner

Ruixiang Li

Art Unit

1646

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/17/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 4, 5, 7-9, 14-17, 19, and 21-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 10-13, 18, and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06/13/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 04/21/2006 & 06/13/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: Sequence alignment.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (claims 1-3, 6, 10-13, 18, and 20) and SEQ ID NO: 1 in the reply filed on 10/17/2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 1-29 are pending. Claims 1-3, 6, 10-13, 18, and 20 are currently under consideration. All other claims are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

Information Disclosure Statement

3. The information disclosure statements filed on 04/21/2006 and 06/13/2005 have been considered by the examiner.

Drawings

4. The drawings filed on 06/13/2005 are accepted by the Examiner.

Claim Rejections—35 USC § 101

5. 35 U.S.C. §101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 1-3 are rejected under 35 U.S.C. §101 because the claimed invention is directed non-statutory subject matter.

Claims 1-3, as written, do not sufficiently distinguish over a DNA that exists naturally because the claims do not particularly point out any non-naturally occurring differences between the claimed products and the naturally occurring products. In the absence of the hand of man, the naturally occurring products are considered non-statutory subject matter. See *Diamond v. Chakrabarty*, 447 U.S. 303, 206 USPQ 193 (1980). The claims should be amended to indicate the hand of the inventor, e.g., by insertion of "isolated" or "purified". See MPEP 2105.

Claim Rejections—35 USC § 112, 1st paragraph

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-3, 6, 10-13, 18, and 20 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated DNA molecule encoding the polypeptide of SEQ ID NO: 2, does not reasonably provide enablement for the instantly claimed genus of DNA molecules and probes. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The factors that are considered when determining whether a disclosure

Art Unit: 1646

satisfies enablement requirement include: (i) the quantity of experimentation necessary; (ii) the amount of direction or guidance presented; (iii) the existence of working examples; (iv) the nature of the invention; (v) the state of the prior art; (vi) the relative skill of those in the art; (vii) the predictability or unpredictability of the art; and (viii) the breadth of the claims. *Ex Parte Forman*, 230 USPQ 546 (Bd Pat. App. & Int. 1986); *In re Wands*, 858 F. 2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988).

Claim 1 recites a DNA which comprises a base sequence shown by SEQ ID NO: 1 or its complementary sequence, or a sequence containing part or whole of these sequences, claim 2 recites a DNA which hybridizes with then DNA according to claim 1 under a stringent condition, and which encodes a polypeptide having glucose and/or fructose transporter function, whereas claim 3 recites a DNA which encodes a polypeptide comprising an amino acid sequence wherein one or a few amino acid sequence are deleted, substituted or added in the amino acid sequence of SEQ ID NO: 2. Claims 18 and 20 are drawn to a probe comprising whole or part of an antisense strand of the base sequence of claim 1. Claims 6, 10-13, 18, and 20 depend from claims 1-3, directly or indirectly. There are no structural and functional limitations for the DNA molecules in claim 1. Claims 2 and 3 do not recite a structural limitation for the DNA molecules. Thus, the claims are overly broad.

While providing sufficient guidance and/or working examples with respect to make and use the DNA molecule that encodes the polypeptide of SEQ ID NO: 2, the instant disclosure fails to provide sufficient guidance and/or working examples to make and use the variants or homologues of DNA molecule that encodes the

polypeptide of SEQ ID NO: 2 and the probes comprising part of an antisense strand of the base sequence of claim 1.

It is unpredictable whether a variant or homologue of SEQ ID NO: 2 would retain the same function as that of the full length of polypeptide of SEQ ID NO: 2. The state of the art (See, e.g., Ngo, et al, *The Protein Folding Problem and Tertiary Structure Prediction*, 1994; Merz, et al. (ed.), Birkhauser, Boston, MA, pp. 433 and 492-495) is such that the relationship between sequence of a protein and its activity is not well understood and is not predictable. Excising out portions of a protein or modifications to a protein, e.g., by substitutions or deletions, would often result in deleterious effects to the overall activity and effectiveness of the protein.

Furthermore, the state of the art is such that determining the specificity of hybridization is empirical by nature and the effect of mismatches is unpredictable, as taught by Wallace et al. (Methods Enzymol. 152:432-443, 1987) and Sambrook et al. (Molecular Cloning, A Laboratory Manual, 2nd Edition, 1989, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, page 11.47). It is well known in the art that hybridization yields nucleic acids that are structurally related, but functionally different. Thus, in view of the nature of complexity of the work and unpredictability of the art, it would take undue experimentation for one skilled in the art to make and use the claimed genus of DNA molecules without sufficient guidance, working examples, and knowledge about functions of encompassed DNA molecules structurally related to SEQ ID NO: 1.

It is also noted that claim 20 recites "a pharmaceutical for diagnosing glucose

an/or fructose transporter function". However, the instant disclosure fails to disclose an association of glucose an/or fructose transporter function with any particular diseases. It would take undue experimentation for one skilled in the art to practice the claimed invention.

Accordingly, The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the DNA molecules and probes commensurate in scope with these claims.

9. Claims 1-3, 6, 10-13, 18, and 20 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof.

Claim 1 recites a DNA which comprises a base sequence shown by SEQ ID NO: 1 or its complementary sequence, or a sequence containing part or whole of these sequences. Claim 2 recites a DNA which hybridizes with then DNA according to claim 1 under a stringent condition, and which encodes a polypeptide having glucose and/or fructose transporter function. Claim 3 recites a DNA which encodes a

polypeptide comprising an amino acid sequence wherein one or a few amino acid sequence are deleted, substituted or added in the amino acid sequence of SEQ ID NO: 2. Claims 6, 10-13, 18, and 20 depend from claims 1-3, directly or indirectly. Thus, the claims encompass a genus of DNA molecules that are variants and homologues of the DNA that encodes the polypeptide of SEQ ID NO: 2. Claim 1 does not require that the DNA possess any particular biological activity, nor any particular conserved structure, nor other disclosed distinguishing feature. While claims 2 and 3 recite a functional limitation, they do not require that the DNA molecules possess any particular any particular conserved structure nor other disclosed distinguishing feature.

The instant disclosure of the DNA set forth in SEQ ID NO: 1 that encodes a Na⁺-dependent glucose and fructose transporter in rat kidney set forth in SEQ ID NO: 2 does not adequately support the scope of the recited genus of DNA molecules, which encompasses a substantial variety of homologues or variants of the DNA that encodes the polypeptide of SEQ ID NO: 2. A description of a genus of cDNA may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus, or of a recitation of structural features common to the genus, which features constitute a substantial portion of the genus. *Regents of the University of California v. Eli Lilly & Co.*, 119 F3d 1559, 1569, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). While disclosing the amino acid sequences of SEQ ID NO: 2 and its encoding DNA of SEQ ID NO: 1, the instant disclosure fails to provide sufficient description information, such as definitive

structural or functional features of the recited genus of DNA molecules or the polypeptides encoded by the DNA molecules. There is no description of the conserved regions that are critical to the structure and function of the genus recited. There is no description of the sites at which variability may be tolerated and there is no information regarding the relation of structure to function.

Moreover, claim 1 encompasses virtually any random nucleic acid sequence of any length as long as it comprises a portion of SEQ ID NO: 1 since the claim does not recite any structural and functional limitations. Furthermore, the prior art does not provide compensatory structural or correlative teachings to enable one skilled in the art to identify the encompassed DNA molecules as being identical to those instantly claimed.

Due to the breadth of the claimed genus and lack of the definitive structural or functional features of the claimed genus, one skilled in the art would not recognize from the disclosure that the applicant was in possession of the claimed genus. Accordingly, only the isolated DNA molecule encoding the polypeptide of SEQ ID NO: 2 (including the DNA of SEQ ID NO: 1), but not the full breadth of the claims meets the written description provision of 35 U.S.C. §112, first paragraph.

Claim Rejections—35 USC§ 112, 2nd paragraph

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1, 2, 6, 10-13, 18, and 20 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it recites a DNA which comprises a base sequence shown by SEQ ID NO: 1 or its complementary sequence, or a sequence containing part or whole of these sequences. It is unclear "its complementary sequence" is referred to the complementary sequence of SEQ ID NO: 1 or the complementary sequence of the DNA. In addition, the claim recites "a sequence containing part of whole of these sequences". It is unclear what "these sequences" are referred to.

Claim 2 recites "a stringent condition". However, neither the specification nor the art provides an unambiguous definition for the term, rendering the claim indefinite.

Claim 18 is indefinite because it recites "a probe for diagnosing glucose and/or fructose transporter function". It is unclear what the metes and bounds of the preamble are. Claim 20 is indefinite because the language is so ambiguous that it is unclear what is being claimed.

Claims 6 and 10-13 are rejected as dependent claims from claim 1.

Claim Rejections—35 U.S.C. §102 (e)

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Isogai et al. (U.S. Patent No. 6,943,241 B2, September 13, 2005; 102 (e) date: 1/25/2002).

Isogai et al. teach a DNA comprising part of SEQ ID NO: 1 (see attached sequence alignment), meeting the limitations of claim 1.

Claim Objections—Minor Informalities

14. Claim 6 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n).
15. Claims 2, 3, 6, 10-13, 18, and 20 are objected because they recite "and/or".
16. Claims 1 and 3 are objected because they use an indefinite article to refer to a unique sequence; "a base sequence shown by SEQ ID NO: 1" in claim 1 should be amended to "the base sequence shown in SEQ ID NO: 1", whereas "an amino acid sequence shown by SEQ ID NO: 2" in claim 3 should be amended to "the amino acid sequence shown by SEQ ID NO: 2".
17. Claim 20 is objected to because it recites "A pharmaceutical", which is not complete in meaning.

Appropriate correction is required.

Conclusion

18. No claims are allowed.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruixiang Li whose telephone number is (571) 272-0875. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Nickol, can be reached on (571) 272-0835. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, please contact the Electronic Business Center (EBC) at the toll-free phone number 866-217-9197.

Ruixiang Li

Ruixiang Li, Ph.D.
Primary Examiner
November 21, 2007

RUIXIANG LI, PH.D.
PRIMARY EXAMINER

Sequence Alignment for 10/539,032

Alignment 1

US-10-104-047-1471
; Sequence 1471, Application US/10104047
; Patent No. 6943241
; GENERAL INFORMATION:
; APPLICANT: HELIX RESEARCH INSTITUTE
; TITLE OF INVENTION: No. 6943241el full length cDNA
; FILE REFERENCE: H1-A0105
; CURRENT APPLICATION NUMBER: US/10/104,047
; CURRENT FILING DATE: 2002-03-25
; PRIOR APPLICATION NUMBER:
; PRIOR FILING DATE:
; NUMBER OF SEQ ID NOS: 4096
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 1471
; LENGTH: 2052
; TYPE: DNA
; ORGANISM: Homo sapiens
US-10-104-047-1471

Query Match 38.5%; Score 837.4; DB 3; Length 2052;
Best Local Similarity 72.2%; Pred. No. 9.7e-239;
Matches 1139; Conservative 0; Mismatches 416; Indels 22; Gaps 3;

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Qy      31 CTCAGAGCTCCAGGGACCCTGGCAAAAAGCTGGACCTCACCAAAACCCTTTGTCTGGAG 90
      ||| ||||| ||| | ||| | | ||| ||| ||| ||| |||
Db     153 CTCGGAGCTCCAGAAGTTCTGCTGAGAAGCGCGCGGCAGC-AAGACGACTTCTCCGGAG 211

Qy      91 CCACCAAGCTGGGGTCGGAATGGAGTTCCGTGGGTCCGGGGCCACTGCTGTTGAGCAGC 150
      | || ||||| || || ||||| ||||| ||||| || | |||||
Db     212 TCGCCGAGCTGGAGTTAGAGGTGGAGCTCCGTGGGGCCGGGCCCCGGCTGCGGGGCAGC 271

Qy     151 ACCTCCTCCAGTCCGAGACCCCAGGGAAGAATGGGCTGCAG-----G 192
      ||||| ||| | ||| |||| | ||||| || ||| ||
Db     272 GGCTCCTGCAGGCGGAGGCCCGCGGAGAATGAGCCGGAGCCGGAGGTGGTGGTGGTCT 331

Qy     193 CCACATCGAGTGACCAAGTGGGAAGAACTGCGCTGGTTACCACTGTGGTTCTGAATG 252
      || ||| | || || | ||||| ||||| ||| | ||| ||
Db     332 CCTGGCAGAGCGGTGGGACCGGGAGCAAGCTGCGGTGGTTACCACTTGATGCTGTGTG 391

Qy     253 CTGCTTTCTGGGAATGGGAGTGAGCGCTGCTGTGCTGGGACCCACATTTCCAGACCTGG 312
      | | ||||| ||||| |||| | |||| | ||||| ||||| ||| |||
Db     392 CCTCCTTCTGGGGCTGGGATTGAGTGTTGCTATAGTGGGACCCACGTTTCAAGATTGG 451

Qy     313 CCAGAAACGTGAACCGGAACATCAGCAGCCTTTCCGAAATCTTCGTGGGCCGAGCCCTCG 372
      | | ||||| ||||| || |||| | || || ||||| || ||| ||
Db     452 CAACAAACGTGAACCGAAATATCAGTAGTCTGTCTTTCATTTTGTGGGTCGTGCCTTGG 511

Qy     373 GCTACCTGGGCGGCTCTGTGGTTGGTGGGGTGCTTTTCGACTGCATGAATCATTTTCTAC 432
      | || || | ||||| ||||| | ||| |||| | ||||| ||||| |||
Db     512 GATATTTGAGTGCTCTGTGATTGGTGGATTTCTGTGATGTCATGAATTATTTTAC 571

Qy     433 TTTTGGGGCTGTCCCACCTGCTTACTGCGGCCGTCTTTACCTCACTCCTTTCTGTAAAA 492
      ||||| || | ||| | ||| ||||| || ||||| || |||||
Db     572 TTTTGGGAATCTCAATGTGGGCTACCACCGTTGGTCTTTATCTTGTTCCTTTTGTCAAGA 631

Qy     493 CAGCTGCCTTACTGACTGCCATGATGTCTATTACCGGTGTCTCATTTGGTGTTCGGATA 552
      |||| |||| |||| ||||| ||||| ||||| ||||| |||||
Db     632 CAGCAATATTACTCACTGTCTATGATGTCTATCTTCGGTGTTCAATTGGCATTCTGGATA 691

Qy     553 CAGGTGGGAATGTCTCATCTTGGACCTTTGGGGGGACAAAGGAGCCCCACATATTCAGG 612
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Db	692	CAGGTGGTAACGTCTTATCTTGGCTATTTGGGGGACAAAGGAGCCCCACATATGCAGG	751
Qy	613	CCTTGCACTTCAGTTTCGCCTTGGGTGCCTTCCTGGCTCCCCTGCTGGCTAAATTGGCCT	672
Db	752	CCTTACACTTCTCTTTTGCCTTGGGTGCCTTTTGGCTCCACTGCTAGCTAAACTGGCTT	811
Qy	673	GGGGTACCACAGCATCTGCTCAGAACCACACAGAGCCTCAGTTAGACCGTTCAGCCTTGA	732
Db	812	TGGGTCCGACAGCGTCTGCTGAAAACCACACAGAGTCTGACTT--CCATCCTGCACTCA	868
Qy	733	ACCGATCCTTTGAAGCCGCCTCAGACTCTGTGTTGGCGGTACCTGACGACATGAATCTTC	792
Db	869	ACCAATCATCTGATGCTGACTCAGAAGCTCTGTTTGGAGTACCTAATGATAAGAATTTAC	928
Qy	793	TGTGGGCGTACGCTTCCATTGGAACCTATGTTCTAGTACTTTCTGTCTTCCTGTTTGCTC	852
Db	929	TGTGGGCTTATGCTGTTATCGGTACTTACATGTTCTTAGTTTCTGTCAATTTTTTTTGTG	988
Qy	853	CATTCTTTTAAAAAGAGGTCAAAGCAGAAAAATCCGCAGCGTCTGCTCAGGGAGCTCGAA	912
Db	989	TGTTTTTTAAGAATAGCTCAAAGCAAGAAAAAGCAAGAGCATCTGCTGAGACATTTTCGAA	1048
Qy	913	GGGCTAAATACCACAGGGCCCTGCTATGCCTCCTCTTCTCTTCTTCTTCTACGTGG	972
Db	1049	GAGCAAAATATCACAACGCCCTTCTTTGTCTCCTTTTTCTGTTCTTCTTTTTTATGTTG	1108
Qy	973	GAGCGGAGGTGACCTACGGCTCTTACGTATTCTCCTTCGCCACCACCACGTTGGCATGG	1032
Db	1109	GAGCTGAGGTAACATATGACTCTTATGTTTTCTCATTGCAACCACCCATGCTGGCATGA	1168
Qy	1033	AAGAGAGCGAGGCAGCTGGCTTGAAGTCCATCTTCTGGGGGACCTTCGCAGCCTGCAGGG	1092
Db	1169	AAGAAAGTGAAGCTGCTGGGTGAACTCCATCTTCTGGGGGACATTTGCAGCCTGCAGGG	1228
Qy	1093	GCCTGGCCATCTTCTTCGCAACGCTCTTACAGCCTGGGACCATGATGGTGTGTGAACA	1152
Db	1229	GCCTGGCAATCTTTTTTGTCTACCTGTTTACAGCCTGGAACCATGATTGTGTTGAGCAACA	1288
Qy	1153	TTGGCAGCCTGGCCTCATCTTTCTTTCTGGTGCTTTTTGACAAGAGCCCTCTTTCCTCT	1212
Db	1289	TTGGCAGCCTGACTTCATCTTTATTTCTGGTGCTTTTTGACAAGAACCAATTTGTCTCT	1348
Qy	1213	GGATCGCGTCTTCTGTGTATGGAGCCTCAATGGCTGCCACGTTTCCCAGCGGCATCTCCT	1272
Db	1349	GGATAGCAACTTCAGTGTATGGGGCTTCAATGGCAACCACATTTCCGAGTGGTGTCTT	1408
Qy	1273	GGATTGAGCAGTACACCACCTTAAGTGGGAAATCCGCTGCGTTTCTGTTGGTGGTGTG	1332
Db	1409	GGATTGAGCAGTACACGACCATCCATGGGAAATCTGCAGCATTTTTTGTAAATTGGTGCTT	1468
Qy	1333	CCCTGGGACTAATGGCGACTCCTGCATTATCTGGAATCTTTCAGGGACACTATCCCGATC	1392
Db	1469	CCCTGGGAGAAATGGCTATTCTGTCAGTCAATTGGAATCTTCAAGGAAAAATACCTGATT	1528
Qy	1393	TGCCAGTAATTCTGTACATGTGTCTGGGCTCAGCAGTATTAACAACCTGTGTTATTCCCTG	1452
Db	1529	TGCCTGTAGTTCTGTATACCTCTTGGGAGCATCAATAGCTACTGGTATTTTATTTCCTG	1588
Qy	1453	TGATGTATAAAGTAGCCACCTTACCTCTGGATCGAAAGCAGGAAAAAGCATCAACAGTG	1512
Db	1589	TGCTATATAAATTAGCCACTTCACCTCTTGATCGCCAGCGAAAAGAAGACAGAAAGAGTG	1648

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Qy      1513 AGGGCCAGAAAATATTACTTTCTAGCTCTAGGCTAATCAAGGAAGCTAAATGAAAGAGGA 1572
      ||| ||||| | || ||||| ||||| | | | || ||
Db      1649 AGGACCAGAAAGCTCTGCTCTCTAGCTCCGGGCTAAATGAATATGAGGAAGAGAATGAAG 1708

Qy      1573 AGGGGAAAGGTGTGAAA 1589
      ||| | | | | |||
Db      1709 AGGAGGATGCAGAAAAA 1725

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Alignment 2

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US-10-104-047-3441
; Sequence 3441, Application US/10104047
; Patent No. 6943241
; GENERAL INFORMATION:
; APPLICANT: HELIX RESEARCH INSTITUTE
; TITLE OF INVENTION: No. 6943241el full length cDNA
; FILE REFERENCE: H1-A0105
; CURRENT APPLICATION NUMBER: US/10/104,047
; CURRENT FILING DATE: 2002-03-25
; PRIOR APPLICATION NUMBER:
; PRIOR FILING DATE:
; NUMBER OF SEQ ID NOS: 4096
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3441
; LENGTH: 518
; TYPE: PRT
; ORGANISM: Homo sapiens
US-10-104-047-3441

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Query Match          66.4%; Score 1631.5; DB 2; Length 518;
Best Local Similarity 73.1%; Pred. No. 3.9e-167;
Matches 318; Conservative 47; Mismatches 69; Indels 1; Gaps 1;

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Qy      45 VLNA AFLGMGVSA AVLGP TFPDLARNVNRNISSLSEIFVGRALGYLGGSVVGVLFD CMN 104
      :| :|:|:|:| :| :|:| | | | | | | | | | | | | | | | | | :| | | |
Db      1 MLCASFLGLGLSVAIVGP TFQDLATNVNRNISSLSEIFVGRALGYLGSVIGGFLVDVMN 60

Qy      105 HFLL LGLSHLLTAAGLYLTPFCKTAALLTAMMSITGVSEFVLDTG GNV LILDLWGDKGAP 164
      :|:|:|:|:| | | | | | | | | | | | | | | | | | :|:|:|:|:|
Db      61 YFLL LGISMSATTVGLYLVPFCKTAILLTVMMSIFGV SIGILDTGGNV LILAIWGDKGAP 120

Qy      165 HIQALHF SFALGAFLAPLLAKLAWGTTASAQNHTEPQLDRSALNRSFEAASDSVLAVPDD 224
      |:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|:|
Db      121 HMQALHF SFALGAFLAPLLAKLALGPTASAENHTESDF-HPALNQSSDADSEALFGVPND 179

Qy      225 MNLLWAYASIGTYVLVLSVFLFAPFFKKRSKQKSAASAQGARRAKYHRALLCLLFLFFF 284
      ||| ||| | | | :|:| | | | | | | | | | | | | | | | | | | | | |
Db      180 KNLLWAYAVIGTYMFLVSVIFFCLFLKNSSKQEKARASAETFRRAKYHNALLCLLFLFFF 239

Qy      285 FYVGA EVTYGSYVFSFATTHVGMEESEAGLNSIFWGTFAACRGLAIF FATLLQPGTMMV 344
      ||| ||| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Db      240 FYVGA EVTYDSYVFSFATTHAGMKESEAGLNSIFWGTFAACRGLAIF FATCLQPGTMIV 299

Qy      345 LCNIGSLASSFFLVLFDKSPCLLWIASSVYGASMAATFP SGISWIEQYTTLTGKSAAFIL 404
      | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Db      300 LSNIGSLTSSLFLVLFDKNPICLWIATSVYGASMATTFPSGVSWIEQYTTIHGKSAAFFV 359

Qy      405 VGAALGLMATPALSGILQGHYPDLVPVILYMCLGSAVLTTVLF PVMYKVATLPLDRKQEK 464
      :|:|:| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Db      360 IGASLGEMAIPAVIGILQGYKYPDLVPLYTSLGAS IATGILFPVLYKLATSPLDRQRKED 419

Qy      465 INSEGQKILLSSSRL 479
      || || |||| |
Db      420 RKSEDQKALLSSSGL 434

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